Method of Test for
DETERMINATION OF THE MOISTURE CONTENT
OF ASPHALTIC CONCRETE (LOOSE MIX)
DOTD Designation: TR 319M/319-97

I. Scope

This method of test describes the procedures to be used in obtaining, preparing and testing loose asphaltic concrete mix for determination of its moisture content, as well as the calculations required to express this moisture content, as a percentage of the mass of the asphaltic concrete.

II. Apparatus

A. **Container** - approximately four-liter (one gallon) can with bail and lid, capable of maintaining a tight seal in order to prevent moisture loss.

B. **Balance** - having a capacity of 10 kg or more and sensitive to 1 g.

C. **Oven** - constant temperature oven capable of maintaining any temperature between 50 and 200±2°C (100 and 400±5°F).

D. **Pan** - large enough to hold bucket, lid, bail and sampled material spread evenly on bottom of pan.

E. **Scoop** - suitable for removing sample from haul truck and placing in bucket.

F. **Miscellaneous equipment** - gloves, goggles, safety equipment, etc.

G. **Worksheet** - Moisture Content of Asphaltic Concrete, DOTD Form No. 03-22-0734 (Figure 1).

III. Sample

A representative sample of 5-6 kg (12-15 lb) shall be taken from two separate locations in the haul truck immediately after the haul truck has been loaded.

IV. Health Precautions

Proper precautions are to be taken whenever hot materials or equipment must be handled. Use container holder or thermal gloves while handling hot containers. Wear eye protection while stirring and weighing heated materials due to possible shattering of particles. Dry contaminated materials under a vent to prevent exposure to fumes.

V. Procedure

A. Determine the mass of can, lid and bail to nearest gram and record on the worksheet.

B. Immediately after haul truck is loaded, obtain temperature of asphaltic mixture in the truck to nearest 2°C (5°F). Record on the worksheet.

C. Obtain the sample from the haul truck as follows.
   1. Select one of the two areas of the haul truck from which to obtain the sample. Remove the top 75 - 150 mm (3 - 6 in.) of material, do not disturb the material. From this prepared area remove enough material to fill approximately one half of the can and place the sample in the bucket. Immediately place the lid loosely on the can.
   2. Select a second area of the haul truck and repeat step 1, completely filling the can. Tightly secure the lid.

D. At the plant laboratory, immediately after sampling, determine and record total mass of sample, can, lid and bail to nearest gram.

NOTE 1: *If the specified oven is not available at the plant laboratory, loosen or perforate the lid and transport the sample to the district laboratory prior to performing steps E through H.*

E. Determine the mass of the pan to the nearest gram and record on the worksheet.

F. Spread sample into tared pan, place can, lid, and bail in pan, and place in oven at 160± 2°C (320±5°F).

G. After an initial drying period of approximately 2-3 hours, remove pan from oven and immediately determine the mass. Record the mass on the worksheet and place the pan back into the oven.

H. Check the mass at approximately 1 hour intervals, and continue drying to a constant mass as defined by no weight loss more than 0.1% between successive mass determinations or until the moisture content exceeds the maximum allowed by specifications.

NOTE 2: *Notify the project engineer immediately when any moisture content exceeds the maximum allowed by specifications.*

I. After the total drying period, remove pan from oven and immediately determine the mass of pan, dry sample, can, lid and bail to nearest gram. Record on the worksheet.

VI. Calculations

A. Calculate wet mass (C) of the sample to the nearest 0.1 g using the following formula:

$$C = A - B$$

where:

A = mass of the sample, can, lid & bail, g
B = mass of the can, lid & bail, g

example:

A = 5828
B = 359

C = 5828 - 359 = 5469

B. Calculate dry mass (G) of the sample to the nearest 0.1 g using the following formula:

$$G = D - F$$

where:

D = dried mass of the sample, can, lid & bail, pan, g
F = mass of can, lid & bail, pan, g

example:

D = 6990
F = 1544

G = 6990 - 1544 = 5446

C. Calculate the mass of water removed from the sample (H) to the nearest 0.1 g using the following formula:

$$H = C - G$$

where:

C = wet mass of the sample, g
G = dry mass of the sample, g

example:

C = 5469
G = 5446

H = 5469 - 5446 = 23

D. Calculate the moisture content (I) to the nearest 0.1 % using the following formula:

$$I = \frac{H}{G} \times 100$$

where:

H = mass of water removed from the sample, g
G = dry mass of sample, g
100 = constant

example:

H = 23
G = 5446

$$I = \frac{23}{5446} \times 100$$

$$= .00422 \times 100$$

$$= 0.422$$

$$I = 0.4$$

VII. Report

Report the total moisture content of the asphaltic concrete mix to the nearest 0.1%.

VIII. Normal Test Reporting Time

The normal test reporting time is 2 days.

MATT MENU SELECTION - 09

DOTD 03-22-0734 (5/97)
METRIC

Louisiana Department of Transportation and Development
Materials and Testing Section
MOISTURE CONTENT OF ASPHALTIC CONCRETE
(LOOSE MIX - DOTD TR 319)

Project No. _222-22-2222_   Date Rec'd. _____

Material Code | 5 | 5 | 1 | (E=238)   Lab No. _03-999169_

Date Sampled |08|-|20|-|97| Submitted By _0377_

Quantity | | | | | | | | Units |M|g| | Purpose Code |3|

Plant Code |H|323| Spec. Code |1|

P O No. | | | | | | | | Date Tested _08-27-97_

Ident. |M|C|-|007|

Remarks 1 |R|E|F|.| |J|M|F| |S|E|Q|.| |1|3|4| | | | | | | | | | | | | | |

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Remarks 2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

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Item No. |5|0|1| | | | | | | | |

Sampled By: _R.N.C_   Date: _08/20/97_

PURPOSE CODES
1. Quality Control
2. Verification
3. Acceptance
4. Check
5. Resample
6. Source Approval
7. Design
8. Independent Assurance
9. Preliminary Source Test

	TEST RESULTS	P/F
JOB MIX FORMULA SEQUENCE NO.	|1|3|4|	|xxx|
LOT NUMBER							|xxx|
PLANT TYPE	|1|	|xxx|

1 = Batch Screenless   2 = Batch Hot Bin
3 = Drum Mixer   4 = Continuous

	TEST RESULTS	P/F
MIX CODE	|5|1|	|xxx|
MIX TEMPERATURE, °C	|3|0|5|	|xxx|
WEIGHT OF SAMPLE, BUCKET, LID & BAIL, g . . . . (A)	|5|8|2|8|	|xxx|
TARE WEIGHT OF BUCKET, LID & BAIL, g . . . . (B)	|3|5|9|		|xxx|
WET WEIGHT OF LOOSE MIX, g (A - B) . . . . (C)	|5|4|6|9|	|xxx|
WEIGHT OF DRIED SAMPLE, BUCKET, LID, BAIL & PAN, g . . . . (D)	|6|9|9|0|	|xxx|
TARE WEIGHT OF PAN, g . . . . (E)	|1|1|8|5|	|xxx|
TOTAL TARE WEIGHT, g (E + B) . . . . (F)	|1|5|4|4|	|xxx|
DRY WEIGHT OF LOOSE MIX, g (D - F) . . . . (G)	|5|4|4|6|	|xxx|
WEIGHT OF WATER, g (C - G) . . . . (H)	|2|3|		|xxx|
MOISTURE CONTENT, % ($\frac{H}{G}$ × 100)		|0|.|4|	|P|

Tested by: _G.E.C._   Checked by: _J.A.C._   Date: _08/27/97_

APPROVED BY: _J.M.C._   Date: _08/28/97_

Figure 1
DOTD 03-22-0734   Moisture Content of Asphaltic Concrete (Loose Mix)